WHAT IS CLAIMED IS:

1. A method for attenuating increases in concentrations of radiation-induced free radicals, superoxide anions or heavy metal cations in a mammalian cell, said method comprising:

contacting said cell with one or more nucleic acids encoding one or more proteins, wherein said one or more proteins are expressed in said cell, and wherein said one or more proteins neutralizes or eliminates a portion of said free radicals, superoxide anions or heavy metal cations in said cell.

2. The method of claim **1**, wherein said one more proteins are selected from the group consisting of a metallothionein, superoxide dismutase, catalase, glutathione peroxidase (GPx)-4, or gamma glutamyl transpeptidase.

3. The method of claim **2**, wherein said one or more proteins is a metallothionein.

4. The method of claim **2**, wherein said one or more proteins is a superoxide dismutase.

5. The method of claim **2**, wherein said one or more proteins is a catalase.

6. The method of claim **2**, wherein said one or more proteins is a gamma glutamyl transpeptidase.

7. The method of claim **1**, wherein said one or more proteins is glutathione peroxidase.

8. The method of claim **4**, wherein said superoxide dismutase is selected from the group consisting of a copper-zinc superoxide dismutase, manganous superoxide dismutase and iron superoxide dismutase.

9. The method of claim **1**, wherein said cell is a human cell.

10. The method of claims **9**, wherein said contacting occurs *in vivo* prior to irradiation of the cell with X-rays.

11. The method of claims **9**, wherein said contacting occurs *in vivo* following irradiation of the cell with X-rays.

12. The method of claim **10**, wherein said cell is a salivary gland cell and wherein said contacting is repeated on a plurality of cells, and wherein said expression of said one or more proteins is sufficient to ameliorate a symptom of xerostomia in the subject.

13. The method of claim **11**, wherein said cell is a salivary gland cell and wherein said contacting is repeated on a plurality of cells, and wherein said expression of said one ore more proteins is sufficient to ameliorate a symptom of xerostomia in the subject.

14. The method of claim **10**, wherein said cell is a lacrimal gland cell and wherein said contacting is repeated on a plurality of cells, and wherein said expression of said one ore more proteins is sufficient to ameliorate a symptom of xerophthalmia in the mammal.

15. The method of claim **11**, wherein said cell is a lacrimal gland cell and wherein said contacting is repeated on a plurality of cells, and wherein said expression of said on ore more proteins is sufficient to ameliorate a symptom of xerophthalmia in the mammal.

16. The method of claim **1**, wherein said nucleic acid is an expression vector.

17. The method of claim **16**, wherein said expression vector is selected from the group consisting of SEQ ID 1 (pMB1-MnSOD), SEQ ID 2 (pMB1-HAMnSOD), SEQ ID 3 (pMB1-CAT), SEQ ID 4 (pMB1-Mt-CAT), SEQ ID 5 (pMb1-hIFN-alpha), SEQ ID 6 (pMB1-EcSOD), SEQ ID 7 (pBAT-R1-CAT) and SEQ ID 8 (pBAT-PCR-CAT).

18. The method of claim **1**, wherein said cell is a salivary gland cell and wherein said nucleic acid is directly or intraductally delivered to said cell *in vivo*, and wherein said contacting is repeated with a plurality of salivary gland cells, and wherein said protein expression is sufficient to ameliorate a symptom of xerostomia in said mammal.

19. The method of claim **1**, wherein said cell is a lacrimal gland cell and wherein said nucleic acid is directly or intraductally delivered to said cell *in vivo*, and wherein said contacting is repeated with a plurality of lacrimal gland cells, and wherein said protein expression is sufficient to ameliorate a symptom of xerophthalmia in said mammal.

20. The method of claim **1**, wherein said method further comprises contacting said cell with a composition comprising a polyionic organic acid.

21. The method of claim **20**, wherein said composition further comprises a transition metal enhancer.

22. The method of claim **21**, wherein said transition metal is zinc.

23. A plurality of recombinant salivary gland cells in a mammal, wherein said cells comprise one or more vectors for expressing a protein which neutralizes or eliminates a portion of free radicals, superoxide anions or heavy metal cations in said cells, and wherein said expression is sufficient to ameliorate a symptom of xerostomia in said mammal.

24. A method for ameliorating a symptom of xerostomia in a mammal, said method comprising:

contacting a salivary gland cell of said mammal with a composition comprising a protein selected from the group consisting of IFN-alpha, IL-10, sTNFR, TGF-β, IL-4 and VIP, anti-TNF antibody, IL1-RA, other antibodies to proinflammatory cytokines, soluble gp39, soluble CD40, aquaporin-1 and aquaporin-5.

25. The method of claim **24,** wherein said protein is IFN-alpha.

26 . The method of claim **24** or **25**, wherein said protein is secreted in a body fluid.

27. A method for ameliorating a symptom of xerostomia in a mammal, said method comprising:

contacting a salivary gland cell of said mammal with a composition comprising a nucleic acid, wherein said nucleic acid encodes an IFN-alpha protein, and wherein said encoded IFN-alpha protein is expressed in said cell at a level sufficient to ameliorate a symptom of xerostomia in said mammal.

28. The method of claim **27**, wherein said mammal is a human and wherein said symptom is associated with a condition selected from the group consisting of: an autoimmune disorder, Sjogren's syndrome, graft-versus-host disease, systemic lupus

erythematosis, rheumatoid arthritis, HIV-1 infection, ageing, autonomic dysfunction, conditions affecting the CNS, psychogenic disorder, trauma, hepatitis C, cancer and decrease in mastication.

29. The method of claim **28**, wherein at least a portion of said expressed IFN-alpha protein is secreted from said salivary gland cell in a body fluid.

30. The method of claim **29**, wherein said body fluid is saliva.

31. The method of claim **29**, wherein said body fluid is blood plasma.

32. The method of claim **28**, further comprising contacting the salivary gland of said mammal with a composition comprising a polyionic organic acid.

33. The method of claim **28**, wherein said composition further comprises a transition metal enhancer.

34. An isolated nucleic acid selected from the group consisting of SEQ ID NOs 1-8.